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VETERINARY JOURNAL

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Editorials.

OUR DUTY TO THE WORN-OUT HORSES.

THIS war, more than any other, has opened the eyes of the veterinary profession to the value of the horse as an animal for food purposes when the time has come for its working days to be ended. The prices given for Army horses which have been destroyed for meat—and this has been done with the humane killer and in the presence of a British veterinary officer—have been phenomenal, and there can be no excuse whatever for the presence in our streets of decrepit and worn-out horses if only the British public can be induced to believe that horseflesh is a good, sound, healthy article of diet.

Our allies are much in advance of us on this question, and a great deal of the meat served up in the hotels, restaurants, schools, and boarding institutions on the Continent is taken from the horse. In every large town horse-meat shops are to be found, and they are fitted up as hygienically and kept just as clean as the shops for the sale of beef and mutton. The animals are killed in the public abattoir, and all is under proper veterinary inspection, in exactly the same way as with beef and mutton. Paris alone has nearly one thousand horse-butchers' shops, all apparently doing a prosperous trade, and the proprietors make decent livings out of the sale of horseflesh only, as they are not permitted to sell the flesh of other animals in the same shop. In Italy recently, in at least three of the largest towns, English horse steak has become such a delicacy that it has been universally asked for in preference to any other, and the price has been higher than the flesh of the cow. The horses sold to the butcher have all been passed by a Veterinary Board, and certified unfit for further military

purposes, quite a number fetching between £70 and £80 each, live weight. When such prices are given on live weight purchase, and the buyer is even then able to kill, skin, prepare the carcass for food, pay abattoir and inspection fees, and yet make a substantial profit, some idea may be gathered of the nutritive food value put upon horseflesh in Italy, France, Belgium, and other Continental countries. If the use of horseflesh as a food could but be firmly established in England, there would be no excuse whatever for working old, decrepit, or lame animals. It would strengthen the hands of the various Societies for the Prevention of Cruelty to Animals, and entirely do away with the old horse traffic to Belgium and Holland. By throwing our professional influence in the scale of common sense in the matter of the use of horseflesh as food we shall not only be saving what is at present an enormous wastage, but effecting a service to the worn-out animal, in that we take away the last grounds of excuse either for continuing to work a decrepit animal or for allowing it to be sent overseas to countries where kindness to animals has not yet been cultivated to anything like the extent to which we practise it in England.

Looked at from every point of view, whether the ultra-sentimental or the cold and practical, our profession should throw its weight in the scale which saves pain and helps economy. By the humane destruction of incurable cases and by advising as to the least wasteful way of utilising the carcasses, we are satisfying both. Our duty, therefore, to the worn-out horses is clear. Let us consistently advise their humane destruction, and the use, wherever possible, of their flesh as food.

INAUGURATION CEREMONY OF THE MILAN VETERINARY SCHOOL, ITALY.

THE Veterinary Schools of Italy (seven in number) have now recommenced their course of studies, and students who have been serving in the army, although not yet demobilised, have been allowed to return.

At the opening of the Milan Veterinary School the inaugural address was given by the venerable director, Professor Doctor Lanzillotti-Buonosanti, whose name is well known to his English colleagues as an honorary member of the Royal College of Veterinary Surgeons, and he was supported in the chair by the following professors :—Terni, Stazzi, Maretti, Bartolucci, Sani, Rugliose, Antonini, Guerrini, and Pirocchi. There were also present Doctors Carriotti Bassano, Mariana, Aquoletti, Mareschi, Lanzillotti-Buonosanti, junr., Tedesco, and about fifty students.

As visitors, given by the courtesy of their Italian allies the place of honour on the right hand of the Director, Majors Hobday and Hilyard, of the British Royal Army Veterinary Corps.

Professor Lanzillotti-Buonosanti spoke of the close relationship of the medical and veterinary professions, and of the effects of the delays caused by the war in the advance of veterinary science, urging the necessity for the present students to make up for lost time by close application to their studies. Some twenty of the students of the school had given up their lives in the service of their country during the war, and he did honour to their memory.

Professor Stazzi also addressed the assembly, emphasising the necessity for the existence of an effective veterinary service in regard to the preservation of the health of the animal community, and afterwards introduced the English visitors, whose names were received with much acclamation. To this Major Hobday replied in Italian, acknowledging the honour done in inviting them to be present at this ceremony, and expressing the hope that the result of the war would be a much closer alliance between the veterinary professions of Italy and England and a numerous attendance of our Italian colleagues at the next International Veterinary Congress.

AN OPPORTUNITY FOR A VETERINARY PUBLIC HEALTH SERVICE.

In almost every civilised country except England there has been established a Veterinary Public Health Service which guards the health of the animal community and is of the greatest economic value to the agricultural world; also, indirectly, it affords a secure protection to the health of the human community as well. Consisting of properly qualified members of our profession, well organised and controlled by a chief who is also a veterinary surgeon, men who have made a speciality of veterinary hygiene and sanitary science, and whose whole time is given to their duties, these officials do not rival the private practitioner, and their services are of the utmost value both to municipalities and to agricultural communities.

Surely such a service would be of value to us, and no better time than the present could be found for the selection of a number of professional men suitable for such duties. The training of the army veterinary officer is one which especially fits him to deal with large outbreaks of disease, and to carry out to the letter all orders and communications connected therewith. The demobilisation of members

of our profession will set free a large number of young, energetic, capable men from whom the most suitable might readily be selected. If left until they settle down to general practice, the opportunity will pass by, but if a start could be made for every county on a similar framework to that which already exists in the Public Health Medical Service, there is no question that it would be a success, and that it would greatly aid the work at present being done by the Board of Agriculture, of which department it really might be made an extension.

MILK.

VETERINARY surgeons are interested in the milk supply both as citizens and professional men. There has been no subject more discussed and debated recently than that of the price of the commodity. To thinking men there seems to be far more profit attached to a consideration of how to increase the flow of milk than eternally haggling over a matter of a penny or twopence a quart. If those who are never so happy as when discussing and settling how much it costs to produce things that they themselves never produced in their lives would devote their surplus energies to envisaging the larger view of the whole field of production and the operations comprised therein, time would be much more profitably spent and results be far more satisfying and equitable. We think that the consumers have been far too liberally represented on the Food Control Commissions and the producers far too sparsely. We all know the wide differences of opinion that frequently separate buyers and sellers. If we form a supposed judicial council comprised of, say, fifteen buyers and five sellers, the point of view of the buyers is likely to predominate, and the majority is almost sure to outweigh and outvote the minority and get its own way, and yet to the nation and to mankind the views of the minority and the work that it is associated with need far more careful consideration and treatment than a body of buyers out to get something as cheap as it can is likely to give them. It is said, and we think with a good deal of truth, that in normal times there is an inadequate supply of milk to serve the wants of the community, and that there are large areas of the country where the women and children get a very meagre supply or none at all. If control applied to the producer inconsiderately and too tightly causes a big reduction in next winter's supply of milk, then there is likely to be a revulsion and reaction of feeling against those who have brought about the position. A supply of milk once lost is not rapidly restored. Large families on farms always appear to produce milk more cheaply than where the labour has to

be hired and paid for at current rates under an eight hours a day rule. This milk question is one in which labour ought to take an intelligent interest. How is it possible for employers to carry on and pay standard wages if they are beaten down to the last penny in the price of their article for sale? Many farmers have only been able to win out favourably on the year by getting a fair price for their summer milk, but now at 6d. a quart they see losses staring them in the face, and we fear that many of them will go out of the dairy business and go in for mixed farming, stock rearing, and some cheese making. The inferior feeding stuffs prevalent for quite a long time have had a deleterious effect on milk supply, and this fact has not had sufficient consideration. The alternatives and partial alternatives to a plentiful and adequate number of dairy farms are a dwindling supply and the springing up of hydra-headed trusts and combines. These are things that no man who loves to see a free and flourishing country life will desire to contemplate. We hope that what we may describe as the twopenny-halfpenny point of view will be got rid of as regards milk production. The discussion of the price of milk threatens to become nearly as everlasting as that of the Irish question, and justice and common sense as between two parties is all that is needed to settle both questions. At present each party cannot be made to coalesce the one with the other. Talk, talk, talk, and ineffective peddling efforts leave the thing or affair talked about in a rotten condition, and in time the thinking man is apt to exclaim—"A plague on both your houses."

"And this is wisdom: not to carp
With wasted breath grown wordy;
For if you harp too long, your harp
Becomes a hurdy gurdy."

G. M.

Original Communications.

A FEW NOTES ON AUTOAGGLUTINATION.

By Captain H. E. HORNBY, G.V.S.
Northern Rhodesia.

If one examines a drop of normal equine blood as a thin film between a clean slide and cover-glass one sees that the erythrocytes tend to form rouleaux. These chains intertwine and anastomose readily to form various sized masses of red cells, in most of which, however, rouleaux formation is not lost. Linking and lying between these masses are individual rouleaux and a few free cells.

Many observers have noted that sometimes the picture presented by a blood film from a horse or other animal affected with trypanosomiasis is different to the one described above. The corpuscles run together to form a number of islets varying in size. The shapes vary, but, naturally, the greater the attractive force the greater the tendency towards the minimum surface area represented by a circle. Rouleaux structure is completely lost, and, to ordinary observation, even the cellular nature of the masses is obscured. This phenomenon is known as Autoagglutination of Erythrocytes, or, more simply, as Autoagglutination.

A short *résumé* of our knowledge of the subject is given in Dr. Schilling-Torgan's article in "Handbuch der Tropenkrankheiten," 1914, pp. 88-91, and from this I will quote freely.

Autoagglutination was first detected in 1898 by Kanthack, Durham and Blandford, when working on experimental nagana. Christy, in 1904, noticed it in cases of sleeping-sickness. Martin and Lebœuf, in 1908, also found it in men suffering from trypanosomiasis. Todd, however, in 1910, found many cases of sleeping-sickness without autoagglutination. Beck, in 1911, found that a sleeping-sickness patient may show it on one day and not on another. The very bad case described by Werner in 1913 ran its course without autoagglutination.

By animals similar fluctuations are observed. Laveran holds that autoagglutination depends less on the species of trypanosome than on the species of host. Thus, according to him, the horse, dog, and cat may show strong autoagglutination.

The occurrence of autoagglutination may arise in infections not due to trypanosomes, although the information thereon is scanty. It is important to know that trypanosome-free apparently healthy men may show slight or even, though rarely, strong degrees of autoagglutination. In sound animals, however, it was only seldom that Yorke found autoagglutination.

Martin and Lebœuf, and, later, Dubois, attempted to divide autoagglutination into grades. Thus:

1st Strong.—Coarse clumping into shapeless islands or packets, in which rouleaux formation is not visible. (In my own observations about to be described, I shall refer to this grade as AAA.)

2nd Distinct.—Large clumps, but with the contours of rouleaux still detectable here and there. (This grade I call AA.)

3rd Weak.—The masses show obvious rouleaux-formation. (No sharp line can be drawn between this grade, which I call A, and the normal appearance of blood.)

Yorke, in 1911, endeavoured to place the phenomenon on a scientific basis. Already Nattan-Larrier had ascertained that the addition of sodium chloride solution rendered the phenomenon more pronounced. Some of Yorke's findings were :—Temperature is of the highest significance ; autoagglutination is absent at 37 deg. C., is well demonstrable at 18 to 21 deg. C., has its optimum at 0 deg. C. Autoagglutination is a property of the plasma, and depends on the enrichment of the normally occurring auto-, iso- and heteroagglutinins. The agglutinin is extractable from the massed erythrocytes by 0·9 per cent. sodium chloride solution. By quick centrifugation with citrated saline, or by shaking with glass beads at 37 deg. C., one can obtain a plasma so rich that, on ice, it will agglutinate even when diluted fifteen to twenty times. Normal plasma will not agglutinate if diluted with more than double its volume.

Dr. Schilling-Torgau concludes his remarks with the statement that when autoagglutination occurs to a marked degree it suggests the possibility of trypanosomiasis, and the subject should be submitted to a careful search for trypanosomes by all methods.

Since 1914 the only published work dealing at length with the subject appears to be two articles by Marty published in vol. x. of the *Bull. Soc. Path. Exot.*, 1917, pp. 392-398 and 484-486. In these articles he appears to attach more importance to the structure of the hæmolute at the periphery of the preparation than to the clumps at the middle. His observations were on human blood, and have not been confirmed by mine on equine blood. He rightly attaches importance to the size of the drop to be studied ; it must cover $\frac{1}{2}$ to $\frac{3}{4}$ of the area of the cover-slip, and must not run to the edge. He makes the interesting observation that the addition of a trace of 1-1,000 potassium carbonate solution disintegrates pseudo-agglutinated clumps that may occur in other blood diseases, but fails to disintegrate clumps truly agglutinated as the result of trypanosomiasis.

For those who are in a position to pursue this branch of research I would suggest that the key to the explanation of the phenomenon lies in the experiment of Mines quoted on p. 93 of Bayliss' " Principles of General Physiology," 1915 :—" The blood corpuscles of scyllium are agglutinated by cerium chloride in a concentration of 0·0008 molar. In a concentration of 0·08 molar they remain in suspension. Tested by their direction of migration in an electric field, the corpuscles are found to have a negative charge, when in sodium chloride of a strength corresponding to that of the blood plasma of the fish. In the strong cerium solution the charge is completely reversed, and the corpuscles are electro-positive. When the dilute solution is added, certain of them have their charge reversed before others ; these positive ones

will unite with negative ones forming aggregates large enough to fall rapidly under the influence of gravity." I have little doubt that it is as the result of adsorption of electrolytes that autoagglutination occurs, and evidence in support of this is furnished by the observations of Yorke and of Marty noted above.

My own work on the subject was in no way connected with an endeavour to explain the phenomenon ; it consisted solely of a series of observations made with the object of ascertaining whether auto-agglutination was pathognomonic of trypanosomiasis, and whether it was of any value as an aid to diagnosis.

I may state here that bovine blood never shows either distinct rouleaux formation or autoagglutination. My observations on the smaller ruminants and felines have not been sufficiently extended to be of any value. My remarks apply only to equines.

My attention was early directed to the phenomenon, and my first notes on equine trypanosomiasis contain numerous allusions to "marked autoagglutination."

To determine if it be a constant feature of trypanosome-infected blood I made cover-slip preparations from twenty-nine fly-struck mules. Of these, the blood of

5 showed autoagglutination and trypanosomes.
7 ,, ,, without trypanosomes.
7 ,, no autoagglutination, though trypanosomes were present.
10 ,, neither autoagglutination nor trypanosomes.

In another experiment to confirm the above finding I examined the blood of fourteen fly-struck equines (horses, mules, and donkeys)—

3 showed both autoagglutination and trypanosomes.
2 ,, autoagglutination without trypanosomes.
3 ,, no autoagglutination, though trypanosomes were present.
6 ,, neither autoagglutination nor trypanosomes.

I next made a number of daily observations of the blood of horses, mules, and donkeys affected with either *T. brucei* or *T. congolense*. The conclusions I arrived at were :—

The species of trypanosome has no bearing on the phenomenon.
The species of equine has no bearing on the phenomenon.
The phenomenon may be present one day and absent the next.
There is no correlation between the presence or absence of the parasite and the existence of autoagglutination.

There is no correlation between the clinical symptoms and the presence or absence of autoagglutination.

In short, given a fly-struck equine, the chances are about even that the phenomenon will or will not be exhibited. The chances are unaffected whether the animal be suffering from an acute, sub-acute, or chronic attack, whether the body temperature be high or low, and whether the parasite be *T. brucei* or *T. congolense.*

Seeing then that an absence of autoagglutination does not preclude the existence of trypanosomes, my next series of observations was with the object of determinining whether the presence of the phenomenon was a sure sign of an animal being fly-struck.

I examined the blood of twenty healthy horses in good condition. Of these—

8 showed weak autoagglutination, what I designate as A.

Some of the remaining 12 showed a tendency towards autoagglutination, so that I hesitated before describing them as O.

I examined the blood of eighteen healthy mules, with the result that—

6 were A.
5 ,, O.
7 ,, on the borderline between the two.

This was satisfactory in that it showed that marked autoagglutination, AA and AAA, was rare in healthy equines.

But what about debilitated equines and those suffering from diseases other than trypanosomiasis? Since making the above recorded observations, I have examined the blood of more than a hundred equines, including two affected with filariasis. Of these, only three showed marked autoagglutination, without any other suspicion of trypanosomiasis. One of these was a donkey affected with coronitis, which caused shedding of the hoof. The second was a horse with a wound of the fetlock attributed to snakebite. The third was an apparently healthy horse.

Before concluding, I wish to emphasise the importance of Marty's insistence that the film for examination shall be of a reasonable size, the blood shall be absolutely fresh, and the glass clean. Neglect of any of these will ensure discrepant results, such as in three successive slides from the same animal, taken within a few minutes of each other, obtaining three different grades of autoagglutination.

Even with all due precautions, findings will not always be satisfactory, but what was formerly known to be true for human beings can now be said to apply to equines also, namely, that when autoagglutination occurs to a marked degree it suggests the possibility. even the probability, of trypanosome infection.

A NOTE ON THE USE OF ADRENALIN CHLORIDE IN PROLAPSE OF THE UTERUS IN A MARE.

By Captain J. F. D. TUTT, M.R.C.V.S., F.R.M.S.,
Winchester.

On March 6th last I was called in to attend to a case of dystokia, due to a dorso-lumbar presentation in a thoroughbred mare (12 years old).

The presentation was rectified with comparative ease, as the mare was a pluripara, delivery of the live fœtus being accomplished within thirty minutes from commencing assistance.

The mare was seen again at 5 p.m., when she was quite normal, was feeding, and the placental membranes had come away.

At 10.30 p.m. an urgent telephone message was received to say that the mare was down and rolling, and in great pain.

On arrival I found the mare sweating profusely, in great pain, rolling, and with complete prolapse of the uterus.

With difficulty the patient was made to rise, and the uterus thoroughly disinfected. On examination it was found to be lacerated in three places through the mucous and muscular coats, and there was profuse hæmorrhage, caused, no doubt, when rolling.

With some trouble, as the patient strained very violently (and caused prolapse of parts already reduced twice before complete reduction was attained), the uterus was replaced, and its interior swabbed out with a 1:1,000 solution of adrenalin chloride (Parke, Davis & Co.). Straining ceased at once. The sudden cessation was quite remarkable, as the patient had been straining violently beforehand, but ceased to do so before the hand was withdrawn. After swabbing the interior of the uterus with adrenalin, a West's vulvar clamp was then put on, and ʒiv of veterinary chlorodyne (Hewlett) given in one pint of warm water.

The following morning the mare showed a decided improvement, and was feeding. The clamp was removed, and the uterus again swabbed with adrenalin and the vagina well sponged out with weak lysol solution. This was again repeated in the evening, and the clamp replaced after each procedure. On the following day the clamp was left off altogether, the vagina well sponged out, and a pessary of iodoform and boric acid inserted.

There seemed a remote chance that the mare might recover, but on the fourth day colic developed suddenly, and death occurred within twelve hours.

Post-mortem revealed peritonitis due, no doubt, as a secondary infection to metritis, the uterine lacerations being incomplete.

Remarks.—The case is interesting owing to the length of time the mare survived, and it is rather curious that after a comparatively easy foaling and her condition at 5 p.m., that prolapse occurred. The fact that the lacerations were incomplete may account for the length of time that elapsed before peritonitis supervened.

Conclusion.—The use of adrenalin chloride in such cases appears to show that it is a valuable agent to arrest straining and the danger of another prolapse, in addition to its value as a hæmostatic.

NOTES ON EVERYDAY CASES.

By Captain E. C. WINTER, F.R.C.V.S.,
Limerick.

Retained Placenta.

At this time of year every country practitioner meets with some examples of this troublesome condition, and I, for my part, have not been immune this season, having had several cases both in cows and mares. I am strongly of opinion that the usual proceeding of forcibly removing the membranes is a mistake, and I find I get the best results by flushing out the womb thoroughly with a large quantity of antiseptic solution at about blood-heat, and repeating the process every day until the membranes come away themselves.

Ordinary saline solution I find as good as, or better than, any other, and, in using the pump, it is necessary to introduce the nozzle well into the os uteri and not to spare the fluid. It is, of course, not advisable to flush out if there is a rupture of the womb.

In cases where the placenta is forcibly removed, I think a lot of harm may be done by wounding the maternal cotyledons and provoking hæmorrhage, as well as more absorption of septic matter. If the membranes and womb itself are kept sweet by the douching, the placenta is automatically thrown off in a day or two, and separates all in one piece, without leaving scraps behind to putrefy after the os has closed, and causing further trouble and possibly sterility next time.

It is always advisable to give a mild saline purge, or rather laxative, in addition to the local treatment.

Strangles.

Another disease that is very rife at this time of year is strangles, and I am of opinion that a good many cases of so-called "catarrh" are really another form of this affection. It is remarkable how many cases of catarrh we get amongst a number of horses crowded together when strangles is about, and although these catarrhal cases may not show any of the ordinary strangles symptoms, they are undoubtedly carriers of the affection. Of all diseases that horseflesh is heir to I think strangles is one of the most contagious, and the infection

hangs round stables, etc., for a considerable period and may be carried by attendants, grooming implements and feeding utensils; public watering troughs are a fruitful source of contagion too.

The name "Strangles" is, like a good many others in common use, rather misleading, and I think "Adenitis" would be a much better word to adopt, as a great many cases of the disease have no affection of the throat glands at all, and the prominent symptom that gives rise to the name is absent, as is the case in "Lockjaw" very often. A strangles abscess may occur in any part of the body where there is a lymphatic or other gland, and the abscesses we do not see give us more trouble than those we do observe.

This disease is a simple one if the abscess can be rapidly "ripened" and evacuated, but if one gets recurrent abscesses, due to opening them as a rule before they are ripe, or abscesses in the internal organs, the results are not so simple, and the sequelæ may give a lot of trouble and often cause the death of a patient, or, what is as bad, or perhaps worse for the owner, permanent unsoundness. The most usual sequel is roaring or whistling, particularly where there is a hereditary disposition to those affections.

In treating this disease strict isolation should be ordered, and every attempt made to bring matters to a head by blistering the swelling and, if necessary, applying hot fomentations; but the latter, as well as poulticing, is rarely carried out properly, and is very troublesome, and for that reason not to be recommended to every client. I find, as a rule, that a smart blister gets the abscess pointing and ready for opening in a few days. The diet, of course, should always be regulated, as in all febrile diseases, and the best food is green stuff, and the best way to administer it is to let the patient pick it up himself if possible. One need not despair of a case of whistling after strangles as, very often, a mild blister applied round the throat, coupled with the administration of nux vomica and a run at grass will work wonders in a horse which, if put into work too soon, would inevitably go wrong.

I have recently got strangles abscesses beside the rectum in a patient, which had the disease in a suppressed form, and I was compelled to lance them through the rectum, about twelve inches in. I have also had a case where the abscess showed itself in front of the shoulder and caused a great subsequent wasting of the muscles in that region. In the latter case repeated mild blisters and moderate work are gradually effecting a cure. About a gallon of creamy pus was taken from this case, and the cause was not suspected till I made enquiry as to there having been strangles about. The stable had been occupied by a strangles case a few months before and had not been disinfected.

Purpura Hæmorrhagica

is another disease that has been rather rife in my practice lately, owing, probably, to the late wet spring and the debilitating effect of a scarcity of green food, as well as short rations all round.

This is a very troublesome affection, and likely to give rise to bad sequelæ too if not taken in time and vigorous measures adopted. Proper hygienic surroundings are an absolute necessity, and nursing of the first importance. I have had a good deal to do with this nasty disease in the U.S.A. for the last four years, where we had often to work under difficulties that do not occur at home, and I found that diffusible stimulants, laxatives and tonics, with green food, where possible, gave the best results. The diffusible stimulant I got the best results from was the good old-fashioned "turps," combined with ferri per chlor. and nux vomica, using, where necessary, strychnine hypodermically, and treating the local swellings with fomentations and massage. Fresh air I look on as an essential, and an intelligent nurse can work wonders in a case of this kind. Chlorate of potash every other day in the drinking water helps a lot too. In cases that eventually turned out fatally it was no uncommon thing to have the attendant report in the morning that "the patient was a lot better, and that the external swellings had almost disappeared." An apparent rapid recovery like this was generally followed by an early demise, and the swellings would be found, on post-mortem, in the internal organs.

Foot Injuries

are in evidence in the practices of most veterinary surgeons, particularly with town men and in the neighbourhood of docks and railway stations, and, even in farm horses, we get an occasional case. I have had a couple of unsuccessful cases lately that gave me a lot of trouble.

The first was a case of quittor that had been neglected for some months, and I decided to operate. The seat of the affection was the off fore. I cast and chloroformed the patient, and proceeded to remove the lateral cartilage, trying to save the coronary band, but this tissue, owing to the long continuance of the case and the numerous sinuses that had formed from time to time, refused to be saved, and sloughed away about a week after the operation. After weeks of troublesome treatment the case seemed to be doing well, when one afternoon, just as the mare was being got ready to go out to grass, my man directed my attention to the fact that she was bleeding from the mouth, and in a couple of hours she was dead. Post-mortem revealed the fact that the stomach was absolutely riddled with bots, and the hæmorrhage came from the mucous lining; a small artery had evidently

been ruptured owing to the surrounding irritation and sloughing. This case never showed any symptoms of trouble, and the stomach and bowels were full of ingesta. It was a vexatious ending to a very troublesome job.

Another case was where a farmer's horse, a long distance off, sustained a foot injury in the near hind, which seemed to the owner to be trivial, and was more or less neglected for ten days. When I saw the case the horse was lying down and the foot very hot and inflamed and the coronet swollen, with the pit of the heel also very full. I had the wound opened from the bottom, and got a fair amount of discharge from it, the wound being right at the point of the frog. In about a week the pit of the heel sloughed away, and in the debris was a small bit of bone, evidently from the navicular, and on getting the horse up I saw that the attachments of the tendons to that bone must have been completely severed, and nothing remained but to order his destruction. The original injury must have penetrated the coffin joint and fractured the bone. The horse showed very little distress the first few days, and the owner considered the injury a trivial one.

Rig Castration.

I have had a couple of cases of this operation within the last few days, and, in one, I failed to find the missing testicle. One was *in situ* and the other hidden, and could not be found, although I searched all through the abdominal cavity and handled all the internal organs. I had one some years ago, in which I found a similar condition, but in the latter case I found, on post-mortem, not one, but two testicles, situated over the neck of the urinary bladder. In this case I traced what I thought was the cord, at one side, from the origin right along the spine to the bladder, and, finding a similar cord on the other side, concluded I was dealing with the ureters, both cords being attached to the spinal column. I would like to know where this testicle is, but am not likely to find out, as the colt is recovering, although he had a severe operation. The second case was easy, as the organ practically popped into my hand on entering the abdominal cavity. I have made a practice of doing this operation through the flank for the last few years, and I find it is much the better method, as one gets a clean wound, uncontaminated by the urine or droppings, and there is rarely any after trouble, and the recovery is much quicker. The resulting scar is very small, and almost unnoticeable.

On tackling a rig case some years ago I found the testicle just above the hock inside the skin, and I must admit that I only found it by accident.

SOME NOTES ON THE FEEDING OF FLESH TO FARROWING SOWS AND THE HABITS OF PIGS.

By C. MORGAN, M.R.C.V.S., D.V.H.
Puerto Cabello.

Is it reasonable to suggest that a certain class of diet (such as one containing a large amount of half-cooked meat, which in packing-houses is termed tankage) has a tendency to develop a kind of cannibal habit in breeding sows? Several weeks ago a number of breeding sows were fed on tankage as well as on maize. Two of these, about two years old, farrowed litters of strong, healthy pigs, but within the course of twenty-four hours they killed and partially ate them all. The two animals were in excellent condition, and with abundance of milk. We then turned the two sows loose to a large pig-pen where other sows had their litters of pigs of various ages. The two sows had their udders distended with milk. Each of them did not rest until they enticed a litter each of young pigs, about a month old, away from other two sows. These two animals got so fierce that neither human beings nor any of the other pigs dared approach them. The result was that the udders of the other two sows got dry, and their young pigs clung on to their foster-mothers and entirely ignored their own mothers. These foster-mothers caused more violent disturbance and noise than all the other pigs in the pen, which were about one hundred in number. They had previously, before being bought this time, bred two litters of pigs, but they were never fed on a meat diet until they were bought by the present owners.

I am inclined to believe that the custom of feeding these sows on the semi-cooked meat was the cause of developing this cannibal craving. In spite of all this, the maternal instinct was stronger than ever, otherwise they would not have robbed the other two sows of their pigs.

Cases are on record of mare-mules secreting milk in their udders to such an extent as to influence them to rob mares of their foals. This is also quite a common occurrence amongst sheep.

It is a well-known fact that pig-breeders have reasons to believe that feeding breeding-sows on raw meat has a tendency to develop bad habits, such as killing chickens, ducklings, and even newly-born lambs. I know of several instances where old breeding-sows have entered cowsheds and ravenously eaten part of the cleansing of newly-calved cows. The pig is an omnivorous animal, and when hungry will devour almost anything that comes across its path, whether clean, unclean, alive or dead. The older the animal the more of these bad habits it develops. The pigs in Great Britain have far more attention paid to their welfare than used to be the case. It was often a

custom in some districts to turn the breeding-sow out of doors a few weeks after farrowing to search for part of her scanty diet, and then it was even dangerous to turn young children out of doors in case they might fall the victims of this voracious cannibal. Most people now have come to realise that the pig, like other domesticated animals, should be properly fed, and kept clean, as the better the hygienic environment the better will the pig thrive and pay. A pig, as we all know, is almost destitute of reason. A circus animal-trainer told me once that he possessed patience to such an extent as to even train fleas to perform certain feats, but that his patience was not sufficient to make a successful stage performer of the pig. Yet the pig is gifted with a certain amount of what we might term selfish animal cunning. Anyone who has seen one of these intruders in a ripe cornfield, with eyes and ears upon the alert, will know that this animal possesses enough cunning to realise that he is a trespasser. Nevertheless, in spite of all his vigilance, it is not of much advantage to himself individually, as he always utters a loud grunt at the approach of a human being, and off he scampers through the rustling corn.

"Yes, I would certainly keep a pig," says "Alpha of the Plough." The idea came to him while he was digging his allotment, and the same day he met the farmer's wife and encouraged her to talk on the thrilling theme. He went indoors, and the first thing that caught his eye was an article on "The Cottager's Pig." He imbibed it with the frenzy of a new religion, and rose filled to the brim with lore about the animal to whose existence (except in the shape of bacon) he had been indifferent so long. Yes, it was a patriotic duty to keep a pig. He was an ally in the war. He saw the whole German staff turning pale at his name, as Mazarin was said to turn pale at the name of Cromwell. By night he could have held his own without shame or discredit in any company of pig-dealers, and in his dreams he could see the great globe itself resting on the back of a pig.

[Irritability and excitement at the time of parturition may bring on transitory dementia in some sows and cause them to kill and eat their litters. Other reasons for the act have been ascribed to lack of flesh diet and consequent liking for it, hereditary vice, deficiency of lime salts in the food, etc. Some sows kill their youngsters and do not attempt to eat them.—SUB-EDITOR.]

THE DIAGNOSIS OF AFRICAN EQUINE TRYPANOSOMIASIS.

By H. E. HORNBY,
Govt. V. S. Northern Rhodesia.

DIFFICULTY of diagnosing with certainty this class of disease was one cause of useless expenditure of public money during the East African campaign. Large numbers of fly-struck, and therefore doomed,

animals were sent long distances by road, rail, and sea to Base Veterinary Hospitals, where, sometimes, they were looked after for weeks before their condition became such as to render the nature of their disease sufficiently obvious to justify slaughter. Had the diagnosis been made at the Advanced Veterinary Hospitals the animals could have been destroyed there, and the subsequent expense saved.

In a previous communication to this journal I have pointed out the present futility of attempted curative treatment. The economical way of dealing with fly-struck equines is to work them as long as this can be done without cruelty and then to destroy them.

Excluding the cause of Surra, which disease is not essentially an African one, three trypanosomes are responsible for equine trypanosomiasis in the Dark Continent. They are *T. brucei*, *T. congolense*, and *T. vivax*. All three set up fatal diseases of the same nature, differing only in the fact that the course of the one set up by *T. brucei* is generally rapid, whereas the illness caused by either of the other two is more frequently chronic. Exceptions occur, of course, and some mules infected with the polymorphic trypanosome will show greater resistance to its ravages than will many horses to those of the monomorphic ones. Acute cases can generally be rapidly diagnosed by demonstration of the parasite; it is the chronic cases which give difficulty.

During the campaign the fact that we had to deal with large numbers at one time often prevented us from giving more than cursory attention to individual animals, and a cursory examination is not sufficient for the basis of a diagnosis involving destruction.

Although Lanfranchi (*Bull. Soc. Path. Exot.* 1915, vol. 8, pp. 112-115) states that a local reaction can be obtained by the instillation or injection of an extract of the infecting trypanosomes, yet no such reagent is on the market. I attempted to manufacture one by centrifuging blood rich in trypanosomes, drawing off the white cell layer, precipitating with absolute alcohol, and making an injection by suspending this precipitate in normal saline. I injected some of this into the eyelid of the donkey from which the parasites were obtained. The result was negative. Until some such diagnostic method is available we must depend on clinical and microscopical examination.

My rule of procedure is this: —

When an animal is brought to me to be "tested for fly," I obtain as much as possible of its history. Has it been through a flybelt? If so, when? Is it eating well? Is it losing condition in spite of a good and satisfied appetite? The last is very important, because

there are few conditions other than trypanosomiasis in which an animal eats well and yet steadily loses condition.

Having obtained a history of the beast, I submit it to the best hygienic conditions available for two or three days, in order to allow it to recover from any slight indisposition due to fatigue or mismanagement from which it may be suffering at the time of admission.

After these days of rest, during which it has been under observation, I note the general condition of the animal, the presence or absence of œdema, the existence of muscular or nervous weakness, the appearance of the membrana nictitans, the presence or absence of lymphadenitis, keratitis, or other lesion associated with the suspected disease.

Darling (*Jnl. of Med. Research*, 1912, vol. 26), speaking of an equine disease due to *T. hippicum*, described it as an intoxication resulting in cellular degeneration and necrosis, injury to or destruction of the continuity of the endothelium, with consequent effusion, œdema and terminal ecchymoses. This description applies to African trypanosomiasis, and it is on the finding of symptoms suggestive of such a state that, in the absence of the parasite, our diagnosis rests.

In all chronic cases of " fly " the condition at best will be fair, at worst it will be emaciated to a degree. The ears tend to droop. The eyeballs are sunken. The coat is frequently harsh. The penis, in geldings, is allowed to extrude frequently from the sheath. The whole appearance is dejected.

As the disease progresses, evidences of œdema appear. Naturally these are most marked when the animal is deprived of exercise. The subcutaneous œdema may amount to a general anasarca or it may be confined to the hind legs or genitalia. Sometimes well-defined swellings form beneath the belly and chest. More rarely the head is involved, and an appearance of " dikkop " results. In resistant cases the sole suggestion of œdema may be the absence of a " clean " appearance of the flexor tendons.

When riding a horse in the early stages of illness one of the first symptoms noted is that it stumbles. As the disease gains ground the weakness becomes more marked. The animal sways when trotted. It tends to fall if turned sharply or pushed, or has a leg raised. In advanced stages the weakness may amount to paraplegia and knuckling over.

The appearance of the membrana nictitans is instructive. With the progressive anæmia there is a gradual paling of the membrane. In advanced chronic cases, it appears almost bloodless. It is in acute cases, though, that the third eyelid is most suggestive in appearance.

Then it may be cyanosed, or yellow, or injected to the point of showing considerable extravasation.

Keratitis, due to invasion of the ocular humours by the trypanosomes, is not very common, occurring in less than 20 per cent. of cases. It is nearly always unilateral, and is accompanied by iritis and consequent photophobia.

Although lymphadenitis is probably a constant lesion, yet it is rare for such superficially situated glands as the suprascapular and premoral to become large enough for manipulation and puncture. Frequently the submaxillary gland is enlarged and indurated.

The pulse shows some correlation with the amount of fever. There is nearly always tachycardia. Tone and volume vary in individuals and from day to day.

The rate and depth of respiration are increased as the result of anæmia, but they are of no diagnostic significance.

If, after completion of my examination, I find that I have as a subject an animal known to have been through "fly" in poor condition, with perhaps a history of wasting, if, in addition, it has pale, yellow, or blotched mucous membranes and has tachycardia; if in spite of these symptoms of illness it eats well, is in no pain, and excretes normally, then I feel justified in saying that the subject is a "fly-suspect."

The next thing to do is to examine the blood. Using a sharp knife, I shave a small area of the external surface of the ear near the tip, and, after cleaning, incise. In advanced cases of "fly" the blood is thin and pale. Transferring a small drop to a clean slide, I cover it with a coverslip. The drop should cover an area of $\frac{1}{2}$ to $\frac{3}{4}$ that of the coverslip, and, preferably, should not reach the edge. Using a $\frac{1}{6}$-in. objective, a small stop, and the concave mirror, I make a search for parasites. If I find one my task of diagnosis is completed. From twenty-nine mules affected with subacute and chronic "fly"—the ordinary run of animals for testing—the first day's search gave twelve positive slides, the next day's five more, and the third day's one more, *i.e.* eleven were negative on three successive days. An examination of the appended records of typical individual cases shows that parasites are generally demonstrable in acute and sub-acute cases, whereas they may be inevident in chronic cases for weeks at a time.

If parasites are absent I make a note of the presence or absence of marked autoagglutination, the former being somewhat indicative of trypanosomiasis.

I may state here that the examination of gland-juice presents no advantages over the examination of fresh blood. Besides, it is fre-

quently difficult to obtain. Also, except for the recognition of the species of trypanosome, stained films are diagnostically inferior to fresh ones. The stained cells tell us nothing of the nature of the disease, and although a differential leucocyte count is of prognostic value, it does not aid diagnosis. On the other hand the volume of blood submitted for examination is less and the chance of spotting an occasional trypanosome correspondingly smaller.

If I fail to demonstrate parasites, I temperature the animal on three, or, preferably, four, successive days. The nature of the fever in chronic trypanosomiasis when parasites are not demonstrable is a low intermittent or remittent one. I have indicated it in Cases V. and VI. A febrile periods occur in such cases, but very rarely does a fly-struck animal go for more than three days without showing an evening temperature of 102 deg. F. or over.

At the end of the three or four days I examine the chart, and re-examine the animal and its blood. If the blood is still negative, then a diagnosis must be made on the strength of the history and clinical symptoms. Of course circumstances alter cases, but I consider that the data available as the result of such a procedure as I have indicated should enable any experienced man to form a diagnosis at which no critic can cavil, even though it may be wrong in a small percentage of cases.

Acute *T. congolense* Infection.

Case I.—Grey Geld. Horse. Came by Train from Tabora. Dull appearance. Fair condition. Appetite somewhat capricious.

Date.	Temp. M	Temp. E.	Pulse.	Membrana nictitans.	Parasites.	Auto-agglutination.	Remarks.
Jan. 25th ..	101	102·2	60 Hard; Full.	Yellow.	++	o	++ indicates numerous parasites.
26th ..	103	106·8	60 Hard. Full.	Yellow. Small petechiæ.	+	o	o indicates no auto-agglutination.
27th ..	104	105			—	o	
28th ..	101	100·6	60 Soft. Full.	Pink.	—	o	
29th ..	100	101·4	55 Hard.	Yellow. Small petechiæ.			
30th ..	102·6	104·8	48 Hard Full.	Dirty yellow.	+	o	+ indicates parasites present.
31st ..	105	102·8	70 Hard. Small.	Pale dirty.	+	o	
Feb. 1st. ..	101	100·2	60 Firm. Full.	Pale. Slightly yellow.			
2nd ..	99·6	100·2	50 Soft. Full.	Do.	—	o	
3rd ..	100·8	103·4	60 Soft. Full	Do.			
4th ..	102·4	105·6	60 Hard. Full.	Yellowish. Small petechiæ.	+	o	
5th ..	104·8	100	70 Hard. Small.	Do.			General appearance considerably worse.
6th ..							

ACUTE *T. brucei* INFECTION (BECOMING SUB-ACUTE AFTER 12TH NOV.).

Case II.—Bay Mare Mule. Contracted infection about 8th Oct., 1918. Condition poor, but coat not staring. Eating well.

Date.	Temp. M.	Temp. E.	Pulse.	Membrana nictitans.	Parasites.	Auto-agglutination.	Remarks.
Oct. 30th ..	100·2	106·8					
31st ..	100	104·4	55 Soft.	Pale.	++	AA	AA indicates marked autoagglutination.
Nov. 1st ..	101·8	104·6			+++		
2nd ..	102·2	104·6	65 Full.	Very pale.			Tucked up. Pendulous abdomen.
3rd ..	102·4	104·2	65 Full.	Pale yellowish. Cyanosed.	+		
4th ..	100·2	102		Do.			
5th ..	99·6	104	65	Pale. Few ecchymoses.	+		
6th ..	103·8	105·4					
7th ..	103·4	101	65	Yellowish. Few ecchymoses.	++		Submaxillary glands enlarged and indurated.
8th ..	100·6	102·6			+		
9th ..	100·4	100·6	60		++	A	
10th ..	101·2	105·6	65		++	AA	
11th ..	101·4	102·4	60 Irreg.		+	AA	
12th ..	100·8	103·4	55		++	A	
13th ..	102·6	104·6	60			AAA	AAA indicates very marked autoagglutination.
14th ..	102·8	105	60		++	o	
15th ..	103	104	60		++	o	
16th ..	102·2	105	65		+	AA	Somewhat off feed.
17th ..	102·6	105	65		++	A	
18th ..	102·2	105	60		++	A	
19th ..	102·6	103·6	60		+	o	Little change in appearance. Appetite maintained.
20th ..	101·4		55		—	A	

SUB-ACUTE *T. brucei* INFECTION.

Case III.—Brown Geld. Donkey. Fair coat and condition. Eats well.

Date.	Temp. M.	Temp. E.	Pulse.	Membrana nictitans.	Parasites.	Auto-agglutination.	Remarks.
Oct. 30th ..	97·6	102					
31st ..	97·4	102·2	45 Soft.	Pale pink.	—		
Nov. 1st ..	99·8	102·2	50		+	AA	
2nd ..	99·4	101·8	60				
3rd ..	102	104·8	70	Pale pink.	+++		
4th ..	104	103·8	70		++		General appearance worse.
5th ..	100	103·2	70		+		
6th ..	100	105·4	65				
7th ..	103	104	75	Very pale. Slightly yellow	++		Submaxillary glands slightly indurated.
8th ..	99	104·6	65		—		
9th ..	101·8	106·8	70		—	A	
10th ..	99·6	101·4	60		—	o	
11th ..	99·6	103·6	60 Irreg.		+	A	
12th ..	99·5	101·2	60		—	A	
13th ..	99	102·4	55 Irreg.		+	o	
14th ..	102	103·6	60	Pinker and injected.	++	o	Somewhat off feed.
15th ..	103	105	70 Weak and irreg.		++	o	General appearance worse.
16th ..	99·4	103·2	70		—	o	Appetite capricious.
17th ..	99·6	101·8	70		—	o	
18th ..	101·2	101·8	45		—	A	
19th ..	100	102	55	Pale pink.	—	o	Eating well again. Only change in appearance since arrival is that he is somewhat thinner.

SUB-ACUTE *T. brucei* INFECTION.

Case IV.—Grey Geld. Donkey. Fair coat and condition. Eats well.

Date.	Temp. M.	Temp. E.	Pulse.	Membrana nictitans.	Parasites	Auto-agglutination.	Remarks.
Oct. 30th ..	98·6	101·4					
31st ..	99·6	101·6	45 Firm	Pale pink.	+	AA	
Nov. 1st ..	99·4	101·2			+		
2nd ..	99·2	101·8	60				
3rd ..	100	102·4	60		+		
4th ..	99·4	102·2			+		
5th ..	99·6	104	60		+		
6th ..	102	105					Left submaxillary glands slightly indurated.
7th ..	102·6	100	65 Firm.	Pale pink.	+		
8th ..	99	102·2			+		
9th ..	99	100	55		+		
10th ..	101·2	102·6	60		+	o	
11th ..	99·8	102·6	50		+	o	
12th ..	100	102·6	55	Pale pink.	+	o	
13th ..	101·8	104·6	55		+	o	
14th ..	101·2	101·6	50 Irreg. and weak.		—	o	Submaxillary swelling now slight and diffuse.
15th ..	99·2	101·6	40		+	o	
16th ..	100	103	65		+	o	
17th ..	99	103	60		+	A	..
18th ..	100	101·4	60		—	o	
19th ..	98·4	101·4	50		+	o	Very little alteration since arrival.

CHRONIC *T. brucei* INFECTION.

Case V.—Grey Mare Somali Mule. Engaged in the campaign since 1914. Very high resistance. Fair condition. Slight keratitis. Eats well.

Date.	Temp. M.	Temp. E.	Pulse.	Membrana nictitans.	Parasites.	Auto-agglutination.	Remarks.
Oct. 30th ..	99·4	102·4			—		
31st ..	100	102·2	60	Pink.	—	A	
Nov. 1st ..	100·6	103·4					
2nd ..	101	103·4	55				
3rd ..	101	103·2					
4th ..	102·2	100·2			+		
5th ..	100	103·8	60	Slightly injected.	—		
6th ..	100·4	102			—		
7th ..	100	101	65				Submaxillary glands slightly indurated.
8th ..	100	103·8			—		Keratitis worse.
9th ..	100·6	101·2			—	A	
10th ..	100·4	102·4	60 Irreg.	Cyanosed. Slightly injected.	—	A	
11th ..	99·2	102·8	45 Irreg.	Do.			
12th ..	100·4	101·4	55	Do.		AA	
13th ..	106·6	102·4					
14th ..	100·4	101	40		—	A	
15th ..	99	99·2	55		—	o	
16th ..	99·4	101·2	50			A	
17th ..	99·4	102	60		—	AA	
18th ..	100	101·2	40				
19th ..	99·2	102·6	40 Irreg. and weak.				General condition maintained. Eye about the same. Fit for work.

PRESUMED CHRONIC TRYPANOSOME INFECTION.

Case VI.—Grey Geld. Donkey, known to have been in "fly." Poorish condition. Pot-bellied. Ears drooping. Good appetite.

Date.	Temp. M.	Temp. E.	Pulse.	Membrana nictitans.	Parasites.	Auto-agglutination.	Remarks.
Nov. 9th ..		102					
10th ..	100·2	101	60 Full. Irreg.	Pale pink.	—	A	
11th ..	99·6	101	55		—	0	
12th ..	99	100·6	55	Pale. Slightly injected.	—	AAA	
13th ..	98·8	101·8	40 Irreg.	Do.	—	0	
14th ..	101	101·6	45		—	AA	
15th ..	102	101·2	55		—	0	
16th ..	99·2	102	55		—	A	
17th ..	99	103·4	60		—	A	
18th ..	104·4	104·6	55		—	A	
19th ..	101·2	103·6	50		—	A	
20th ..	99·4	101·4	50		—	0	
21st ..	100		50		A	A	No change in appearance since arrival.

Clinical Cases.

LACERATION OF THE VAGINA IN THREE MARES

BY CAPTAIN J. F. D. TUTT, M.R.C.V.S., F.R.M.S.,
Winchester.

CASE I.

Subject.—Aged (15 years), artillery mare.

History.—This case was sent into the sick lines of the 1/1 Home Counties Mobile Veterinary Section in the spring of 1916, with the history that the animal had difficulty in urinating, and with the suggestion that it had either a calculus or growth in the bladder.

Shortly after admission, when urinating, a piece of fæces was observed to fall out of the vulva, and vaginal examination revealed complete rupture of the upper wall of the vagina, with displacement of the rectum, which was lying on the floor of the vagina, all fæcal matter being discharged per vulva.

The injury was, no doubt, caused by a dystokia at some prior date, and it seems curious that the real condition was not discovered beforehand, as it was obvious that no proper examination had been made, or the case would hardly have been described and sent in like it was.

Destruction was carried out owing to age and condition.

CASE II.

Subject.—Thoroughbred mare. Pluripara. Aged.

History.—Was injured during coitus last season, the penis lacerating the upper (rectal) wall of the vagina for several inches.

Treatment.—Ordinary antiseptic measures led to an uninterrupted recovery, and the mare has been put to the stallion this year. The wound has healed well.

CASE III.

Subject.—Thoroughbred virgin mare. Two years old.

History.—Was severely injured during coitus ten days ago, the penis perforating the wall of the vagina immediately above the os uteri.

On manual exploration, the hand and arm could be easily passed through the wound and the intestines felt. There was little or no hæmorrhage.

Treatment.—Antiseptic measures; pessary of iodoform and boric acid inserted twice daily.

The temperature at the period was 104 deg., and it has gradually declined, and at the time of writing it is normal, and there is every prospect of recovery.

[The author writes on June 1 that this mare has since died from chronic peritonitis. She showed very little pain and her temperature never rose above 101° F.]

HÆMATOMA OF THE PENIS.

By L. R. C.
Veterinary Surgeon, Queensland.

AFTER reading Mr. J. H. Parker s " Fatal Dual Operation " in the November VETERINARY JOURNAL, I thought that the following clinical note would be of interest :—

The Arab stallion *Resolve* was purchased at a high figure by his present owner, Mr. Albert H. Lowe, and, being a very vigorous sire, he was always on the look out for a " lady." Early one morning he was let into his yard, and at the outside of the fence was a mare in " œstrum." He immediately raised himself on to the fence and endeavoured to serve her, and in doing so bruised the penis. The following day the penis-sheath and scrotum were swollen, which, in five days had extended to the umbilicus. I was then called in, and prescribed soothing treatment, so as to allow the swellings to subside to enable a thorough examination. Some four weeks later, all the swelling having disappeared, the owner thought to try him again as a sire, and found that when the penis was protruded it had a decided turn to the right side, which prevented from "entering." I was acquainted of the facts, so called and watched him, and when he urinated the stream passed twelve to eighteen inches outside his right leg.

I then decided on an examination. The animal was given 30 c.c. of *filtered* Cannabis Americana (P. D. & Co.) slowly into the left jugular vein. (Why I mention filtered is that I have never had any abscess formation at the site of injection since I filtered the Can. Am., which was always the case before.) In about three minutes the

animal lay down, and, being securely fastened (for safety's sake), I secured hold of the penis, and on withdrawing it found a large swelling about four inches long involving half the structure of the penis. I put an incision the full length of the swelling, and found it full of hard dried blood, which was removed, and the inside of the cyst was thoroughly scraped with a spoon curette, thoroughly syringed with a warm 5 per cent. solution Septico (P. D. & Co.) and water, the part dried, and Pulv. Iodoform dusted well into the opening.

The animal never once moved during the operation, and for ten minutes afterwards lay peacefully. No local anæsthetic or adrenalin or such-like was used. Four weeks after the operation he was allowed a mare, more especially to see how he managed, which he did in his old style, evidently none the worse for his operation.

When the penis was protruded it was perfectly normal, and all that could be seen of the incision was a thin white scar about the thickness of No. 6 suture silk.

The date of the incision, etc., was February 12th, 1914, and the horse is still doing stud duty.

General Articles.

CONTAGIOUS ABORTION QUESTIONS ANSWERED.

By Dr. F. B. HADLEY.

(*Continued from page* 193.)

Does the bull become infected? With a few notable exceptions, all attempts to isolate the specific abortion organisms from the bull have failed. In fact, the bull is often the only member of a diseased herd that is free from infection with this germ. Unquestionably the male often becomes infected with the germs that produce the various secondary diseases in the female which are properly classed under the more inclusive term "abortion disease."

How may a bull become infected? Mating with an infected cow appears to be the most common way. Other ways of infection are the same as those mentioned for the cow.

After a cow aborts once, is it true that subsequent abortions are always due to the original infection? Most certainly not, as it is quite possible that a new or re-infection of even greater virulence than the former has occurred from a fresh source. In such a case the cow might abort earlier than she did the first time. Some authorities believe that later abortions may be due to the organisms that are responsible for the complications which follow abortion.

Are all breeds of cattle equally susceptible to abortion infection? There appears to be no difference in the susceptibility of different breeds of cattle to abortion infection. However, as there is more traffic in certain breeds than in others, a greater chance of spreading the disease amongst them is possible. Investigations show that cattle of these breeds are more often infected. Until recently range cattle, which belong largely to the beef breeds, were relatively free, but now many of them are known to be affected. It is reasonable to believe that under exactly similar surroundings cattle of different breeds would acquire the disease with the same uniformity.

Methods of Spreading Abortion Disease.

By what means may abortion be introduced into a herd? The most common source of infection is the cow which has a vaginal discharge as a result of abortion infection. Raw milk and milk products containing the germs are thought by some to be factors in the spread of the disease. Less frequently than has been supposed does the bull introduce abortion into a herd; yet, as has been pointed out, the bull may act as a mechanical carrier of the germs. It may be impossible to find out the exact way in which the disease made its way into a given herd.

When is an aborting cow most dangerous to others? Just before and just after a cow aborts she gives off large numbers of abortion germs in the discharge from the vagina. Often this fluid is literally alive with the germs. This discharge is capable of infecting other cows, and is the most common and important agent in the spread of the disease from one animal to another and one herd to another.

What is meant by a "carrier" of disease? A disease carrier is an animal that has had an attack of a certain disease and recovered, but is still discharging in the secretions and excretions of the body the living, virulent germs. If these germs get into the bodies of other susceptible animals they are capable of causing the same disease.

Are cows ever carriers of the abortion germs? Some cows have been known to act as carriers for several years after they have ceased to abort, their milk containing the germs continuously. What is even more important is that some cows which have always calved normally may be carriers and spreaders of abortion germs. There is proof that the udder acts as a breeding-ground for the germs. In non-pregnant cows the udder seems to be the only organ in the body where the abortion bacilli can live.

May calves be the means of transmitting the infection? There is some reason to believe that calves while being fed on milk containing

virulent abortion bacilli may be a factor in the spread of abortion. Therefore, to be on the safe side, it would be well to postpone introducing calves from a herd in which abortion exists until at least one month after all raw milk has been withheld from their ration.

What part does the bull play in spreading the disease ? Conflicting views prevail among livestock men in regard to the importance of the bull as a disseminator of contagious abortion. The writer and assistants have carried out a carefully controlled experiment to shed light on this important question. Abortion-infected bulls were mated with abortion-free virgin heifers. A full report of this work is printed in the Journal of the American Veterinary Medical Association, November, 1916. The conclusions are summarised :

(1) Bulls may become infected with abortion bacilli.

(2) Bulls that reacted to the blood tests were incapable of disseminating the abortion disease to the virgin, abortion-free heifers with which they were mated.

(3) Bulls appear to possess a sexual or individual immunity to abortion infection that renders them less susceptible than cows and induces a milder form of the disease.

(4) Bulls, when infected, have the ability to weaken the infecting germs of abortion in their bodies in a relatively short time, so that they will be safe for the service of non-infected cows.

(5) Cows usually acquire the abortion disease from other cows instead of the gentialia of bulls at time of service, as has been supposed.

Is it dangerous to permit a bull to serve a cow that has previously aborted ? It has been shown that the bull seldom acquires the disease. This should not be taken as meaning that he may not act as a mechanical carrier of various disease-producing germs from an infected to a healthy cow. Therefore the precautions detailed elsewhere should be taken in caring for the bull. Even if he has been permitted to serve a cow that is later learned to have aborted, the danger to cows subsequently served would not be so great as from other cows in the herd that are known to have harboured the infection.

Is there danger of spreading abortion by means of milk ? There is no doubt that mixed whole milk, skimmed milk, and buttermilk from several herds contain living abortion germs. When this is fed to calves there is a probability of their becoming infected. To prevent the spread of milk-borne diseases, the Wisconsin State Department of Agriculture requires the owners of all creameries, skimming stations, cheese factories, and condenseries to pasteurise all by-products before returning them to any farm or feeding station. The strict enforce-

ment of this regulation should be a decided help in preventing the dissemination of the abortion disease, as well as all other infectious diseases of cattle, particularly tuberculosis.

Would there be danger from a pasture in which a cow aborted? In a previous answer it was shown that the life of the abortion germ outside the body varies quite widely with conditions. However, it is certain the alternate freezing and thawing that occurs during the winter and spring months, combined with other natural destructive agencies, can be depended upon to weaken all abortion germs that may have been left in a pasture by infected cattle before the next spring, so that no danger need be feared.

EFFECT ON THE ANIMAL.

What are the symptoms of abortion infection? During the early months of pregnancy no symptoms of abortion infection are evident. If the fœtus dies at this stage, it is expelled without causing any marked disturbance. Later in pregnancy abortion is announced by swelling of the udder, congestion of the external genital organs, thickening of the milk, and a vaginal discharge of a red-brown or gray colour which may or may not have a bad odour. The afterbirth is often retained, and the cow may develop a stinking discharge from the uterus that will prevent conception. It should be understood, however, that cows may be infected with abortion without showing any of these symptoms. This means that actual abortion of the fœtal calf does not have to occur to constitute abortion infection—an important fact not generally appreciated.

In what organs of the cow do the germs usually locate? The space between the walls of the uterus and the fœtal membranes is the place where the germs find conditions especially well suited for growth. They may also locate in the fallopian tubes. The udders of some cows have been found to harbour the abortion germs for long periods.

How is the uterus or womb affected? It is in the uterus that abortion infection produces the greatest amount of damage. Here the germs multiply in such numbers as to interfere with the passage of nourishment between the mother and the fœtus. This usually results in death of the fœtus, and often is followed by retention of the afterbirth. A sequel in many cases is an accumulation of pus in the womb. This is caused by pus-producing germs which gain entrance at the time or after the fœtus is expelled. In such cases sterility is likely to result either from the inflammation that accompanies the condition or from the pus itself.

How long after exposure will a cow abort? The incubation period of abortion, or the time between the entrance of the germs into the body and the occurrence of abortion, varies with the resistance of the

animal and the virulence of the infecting germs. When the resistive forces of the body are high and the virulence of the organism is low, the animal does not abort until late in pregnancy, or may never abort. On the other hand, if the resistive forces are weak, and the abortion germs are strong in either number or virulence, especially in both, the incubation period is short, and the course of the disease is rapid. In this case abortion occurs early.

At what period of pregnancy does abortion usually occur? There is no set period at which abortion may be said to occur. Some cows abort so soon after being bred that none of the characteristic symptoms of abortion are evident, and the fœtus is so small as to escape notice. Other cows do not abort until the sixth or seventh month of pregnancy.

Does infection with the abortion germs always result in abortion? When the abortion germs lack the necessary disease-producing properties, or the cows have marked resistance, abortion does not occur. Moreover, when the germs do not get into the body until late in pregnancy, they do not have time to produce enough damage to interfere seriously with the nutrition of the fœtus and to cause its premature expulsion.

How long may the germs of abortion live in the cow's body? Undoubtedly there is a great difference in the ability of different cows to throw off the germs. Schroeder and Cotton believe that the germ lives but a few weeks in the empty uterus, but in exceptional cases may inhabit the udder for months or even years. The reason for this would seem to be a lack of suitable food material in the former organ and a plentiful supply in the latter.

When do the germs of abortion exert their greatest damage? After the uterine seal is formed the air is shut out and the fœtal tissues develop. These conditions are most suitable for the growth of the abortion germs, and it is then that they produce the greatest harm.

What is the cause of retention of the afterbirth or placental membranes? Retained placenta is always the result of metritis or inflammation in the womb. Metritis is caused by the germs of abortion and of other infections, as well as by filth and mechanical and chemical irritants. Retention of the placenta should be regarded as a complication of, or secondary to metritis. The inflammatory changes are often accompanied by swelling in the cotyledons which prevents ready separation of the fœtal and maternal membranes.

What are the symptoms of retention of the afterbirth? The symptoms of this condition vary with the length of time that has elapsed since calving. Usually a portion of the membranes hangs from the vagina, but sometimes nothing is visible. A discharge of

varying degrees of offensiveness is always present. Neglected cows develop a fever and lose appetite.

What may be the results of retention of the afterbirth ? When the fœtal membranes become putrid the cow may develop one or more of the following symptoms of disease : (1) loss of appetite ; (2) reduction of milk ; (3) loss of flesh ; (4) blood poisoning ; (5) inflammation of the womb with accumulation of pus ; (6) a foul-smelling, persistent discharge ; (7) sterility ; (8) death.

How has it been shown that the udder may become infected with abortion germs ? Schroeder and Cotton have repeatedly demonstrated that when abortion bacilli are injected into the udder through the teat, the bacilli establish themselves in that organ and the cow becomes infected. Other investigators have shown that milk drawn under sterile conditions may contain these organisms.

Do the abortion germs bring about any visible change in the udder ? Careful pathologic examinations of the udders of cows that were known to have continuously eliminated the germs of contagious abortion in their milk for a long time previous to slaughter failed to show visible lesions of any kind.

Can the abortion germs pass from other points of entramce to the uterus ? Positive proof is available that once the germs of abortion get into the body they are capable of passing to the uterus.

Do the ovaries ever become infected ? It is believed that certain ovarian diseases which destroy the egg-producing functions of the ovaries are due to the inroads of the abortion bacilli, although, in the opinion of Bernath, the other germs that gain entrance to the genital organs after the calf is expelled are responsible for the ovarian disturbances.

Does the blood contain the germs ? Very rarely, if ever, does the blood under natural conditions contain the germs. Even the blood of non-pregnant cows, into whose veins abortion germs have been experimentally injected in great numbers, does not contain them after a few hours.

Does abortion infection always result in the death and expulsion of the fœtus ? The usual result of infection with the abortion germs is death and expulsion of the fœtus before term. Occasionally, when the fœtus dies, it is retained for weeks or months, and gradually dries up and assumes the condition of a mummy. Again the fœtus is carried to full term and the calf is born alive, but is so weak that it either dies in a little while or fails to thrive. Some cows have enough resistance to withstand the attacks of abortion germs and give birth to

calves that are in every way normal and healthy. For these reasons the act of abortion should not be taken as a basis for measuring the prevalence of abortion disease in a herd.

Does the bull harbour the germs? A much smaller percentage of bulls in infected herds become infected than of cows. The germs of abortion have been isolated from the genital organs of bulls in only a few cases. (See section entitled "Effect on the Animal.")

How long after serving an infected cow is a bull dangerous? There is every reason to believe that a bull which has served an infected cow will be able within a few weeks to free itself of all abortion germs which may have contaminated its genital organs at the time of service.

What is the most common complication or sequel of abortion infection? The commonest and most serious complication of contagious abortion is sterility or barrenness. This affection causes even greater losses than abortion.

Is sterility due to other causes? Yes, a number of other germs, particularly those that produce pus, may cause sterility. These are more likely to be present if the cow has had difficulty in calving or a retained afterbirth and pus have collected in the uterus. Still other causes are overfeeding and lack of exercise, diseases and defects in other organs of the genital system, and certain nervous affections.

What are the symptoms of sterility? Some sterile cows come in heat regularly, but fail to conceive even after repeated services; other sterile cows never come in heat.

How does sterility handicap the cow? It renders her incapable of producing young. Next to death this is the greatest disaster that can befall the purebred cow, for no matter how great her individual excellence, she is unable to transmit her attributes to posterity, and is only fit for the block.

What may be expected from an aborting cow? Unless given early and expert attention, a cow which has aborted is not likely to prove profitable as a producer unless she either is above the average in point of production, or is of pure or especially good breeding. The reasons for this statement are: (1) the milk flow will be materially less than normal; (2) there is likely to be some difficulty in getting her to conceive promptly; (3) there is a decided probability that she will abort in the next gestation period. It should be noted, however, that when properly treated she may become the most valuable animal of the herd.

Means of Diagnosis.

What is meant by the term "diagnosis?" Diagnosis is the art of determining the nature and location of disease. It is the first step towards intelligent prevention and treatment. In a word, it is detecting what ails the animal.

How may the abortion disease be diagnosed in a herd? Besides the history of the herd, which is invaluable in making the diagnosis there are several laboratory tests that are capable of detecting abortion infection. The two tests that have been found most reliable are: (1) the isolation of the abortion germs; (2) the blood test.

What is the procedure followed in isolating the abortion germs? The germs of abortion may be isolated from the aborted fœtus, fœtal membranes, uterine exudate, and infected milk by either the direct or indirect method. The direct method consists in placing minute particles of tissue on suitable culture media which are incubated under reduced oxygen pressure for several days at body heat. If conditions are right the organism will appear in transparent colonies about the size of a pinhead on the surface of the media. The indirect method consists in injecting some of the tissue believed to be infected into a guinea pig. The organism of abortion produces characteristic lesions in the liver and spleen of the experimental animal from which it may be recovered by the direct method. The indirect method is the more reliable and the one usually followed by laboratory workers.

Why are the isolation methods not used more generally? Because they require very careful technique, and consume much time, and suitable material is not always obtainable. Furthermore, on account of the difficulty in satisfying the conditions for growth of the abortion organism, they are frequently not successful even if the germ is present. In experimental work, however, they are of great value. The indirect method of isolation, although very reliable, is too slow and expensive to be used for testing large numbers of cattle.

How many kinds of blood tests are in use? Two, the complement fixation test and the agglutination test. They are recognised as the only practical methods of diagnosing contagious abortion on a large scale.

What do these tests demonstrate? They show the presence or absence of certain specific chemical substances, known as antibodies, that are produced as a result of the animal having become infected with the abortion germs. Although these blood tests indicate whether the antibodies are present, they do not demonstrate the presence of germs in a blood sample.

How is each test made? The complement fixation test is quite complicated, as in making it the blood from animals of four different species must be employed.

The agglutination test is simpler, and consists of adding graduated amounts of the blood serum of the animal to be tested to one cubic

centimeter of a milky suspension of the abortion organism. The tubes are incubated for six hours, and then placed in a refrigerator over night. When the organisms clump or agglutinate in the bottom of the tube, and the liquid above is perfectly clear, the test is interpreted as positive, and is indicated by a plus (+) sign. A negative reaction is indicated by a minus (−) sign.

Which blood test is the more reliable? There is little difference. At one time it was thought that the fixation test was in closer harmony with clinical data. This would be true only when this test is conducted with extreme care as to details of manipulation and interpretation of results. While neither test is infallible, and capable of detecting all cases, both are as close to the actual condition as it is possible for any biologic test used in diagnostic work to come.

Does a positive reaction to the blood tests tell whether a cow will or has aborted? No, it simply demonstrates that the antibodies, produced as the result of the abortion germs, are present in the animal's body. A reacting cow may have aborted, may abort, or may never abort. When the blood sample is drawn very close to the time of aborting, the reaction is often less marked, and may even be negative, while it would have been positive earlier or later. Furthermore, the disappearance of the germs from the animal's body is not followed at once by a disappearance of these antibodies.

How long after abortion will cows continue to react with the blood tests? For varying lengths of time. More continue to react, especially those with udder infection, than change from a positive to a negative reaction. The Station has records on some cows that have given a positive reaction every time the tests were applied over a period of six years.

How is a blood sample taken from an animal? The hollow, pointed needle of a veterinary hypodermic syringe is plunged through the skin into a vein. The blood may be drawn from a milk vein or a jugular vein, whichever is more convenient. If the latter is chosen, it first should be engorged with blood by drawing a rope tightly around the neck just in front of the shoulders. The animal's head is held to one side by a halter rope or " bull lead " in the nose. No special precautions are necessary except that the needle be clean. The blood is caught in a sterile test tube or small bottle *as it flows from the needle.*

(*To be continued.*)

Translation.

CONCERNING A UTERINE MURMUR IN OUR LARGE DOMESTIC FEMALES.*

By M. BEDEL,
Dozulé (Calvados.

It was Kergoradec who, auscultating the abdomen of a woman in the latter stages of pregnancy, discovered a uterine or utero-placentary respiratory sound or murmur.

"This noise, which has been compared to the words *vous* or *fut*, pronounced in a whisper, appears generally in the woman towards the fourth month (very rarely at the tenth or twelfth week). It is heard at first on the middle line a little above the pubis (Depoul), afterwards at the level of the lateral and inferior part of the abdomen (always on the left side and in front), rarely at the depth of the uterus.

"It is characterised by its extreme mobility, not only as regards site, but as regards intensity, although this latter is accentuated generally in accordance with the approach of full term.

"Its rhythm presents all the varieties of 'chlorotic respirations,' intermittent, simple, sometimes continued with or without acceleration. Its tone is also equally very variable, soft, and without shock, rasping and accompanied by vibrations (Cazeaux), hissing, snoring, under the form of a groan or whine or a musical sound with perceptible shock to the hand (Pajob)."

Does there exist a similar sound amongst the large domestic females?

Our classical obstetric works (Saint-Cyr and Violet, Boulet) mention it only as having been heard in the woman.

Nevertheless, in 1902 we referred in a work entitled "Revue d'Obstetrique" to the presence in an anæmic heifer in the eighth month of pregnancy of a soft respiratory sound of perfect rhythm, synchronising with the heart-beats of the mother, which was observed in auscultating the right flank. This cow presented at the same time a systolic murmur of the heart.

Since this event we have practised obstetrical auscultation in a great number of females, and have been able to hear uterine respiratory sounds or "puffs" in five cows and one mare which had reached an advanced stage in pregnancy (from seven to nine months in the case of the cows, and at the end of the eleventh month in the case of the mare).

*Translated by Capt. L. J. Kelly, R.A.V.C., F.R.C.V.S., from *Recueil de Medecine Veterinaire.*

In the cow it was observed four times in auscultating the region of the " thigh fold," twice above this fold, and once below. In one case of first pregnancy it was heard in the inferior third of the left flank.

In the mare it was met with when auscultating the abdominal region comprised between the median line and the left " thigh fold." The noise was always rhythmical, and synchronised with the heart-beats of the mother.

Its tone was sometimes soft, sometimes a little harsh, and could be compared to the sound which one would produce in whispering the words *fou* or *feu*, with teeth slightly parted ; in the case of first pregnancy its tone was harsh and vibrating, which might be compared with the sound produced in whispering the word *feu* with the teeth closed

The sound was not constant, and disappeared following a brisk movement of the fœtus ; nevertheless, in two cases (one in a mare, the other in a cow) it was not affected by these movements.

Here are a few notes which we have taken on the subject :—

(1) *Cow, eight months pregnant.*—Murmur soft (*fou-fou*), noticed in the right flank above the " thigh fold," synchronised with heart-beats of the mother ; were heard for about three minutes, and disappeared following movement of fœtus.

(2) *Cow, seven months pregnant (first).*—Sound of good rhythm ; tone, harsh and vibrating (*feu-feu*), perceived towards inferior third of left flank during some minutes, following a movement of the fœtus it disappears. We have re-examined this cow several times, and have been unable to again locate the sound. The heart of the mother was normal.

(3) *In the eighth month of gestation.*—Uterine " puff " of perfect rhythm, tone soft (*fou-fou*), perceived below right " thigh fold." The sound persisted in spite of frequent movements of the fœtus, and was again located at three separate auscultations made at some minutes, interval. Heart of mother normal.

(4) *Cow in ninth month of gestation.*—Sound synchronising with heart-beats of mother above right " thigh fold," continued for some minutes ; disappeared when fœtus was moved.

(5) *Half-bred mare, eleven months pregnant.*—Uterine murmur of perfect rhythm and of soft tone, synchronising with the heart-beats of the mother, were perceived by aid of phonendoscope in the abdominal region, between middle line and left " thigh fold." The murmur persisted in spite of the movements of the fœtus. Heart of mother normal. This mare gave birth two days later.

These facts tend to show that there exists sometimes, although rare during the period of pregnancy amongst our large domestic females, a uterine murmur, " puff," or respiratory sound.

XUM

Up to the present this murmur does not appear to have any importance from the point of view of diagnosis of pregnancy, inasmuch as it has only been perceived in the later months of this state and when other manifestations, as, for example, the movements of the fœtus, are also present. At the same time we consider it of interest, and draw attention to it in order that it may be looked for by others and studied more fully.

THE BUTCHER'S LAMENT.

The meat inspector is mine enemy, I shall not like him.
He maketh me to shoo out the flies and cover the sausage mill.
He showeth me the meat I shall sell, and that I shall not.
Yea, verily, tho' I scrub the ice box twice yearly, he sayeth it is not clean.
He kicketh if I keep hogs in the back yard and sayeth it is unsanitary
He smelleth of my sausage and heaveth it in the slop barrel, even tho' it be but slightly sour.
He demandeth that I use not the larynx and mammæ for sausage.
And he speaks in harsh tones if I disobey him.
I bringeth my meat to his office for inspection, wrapped in tree tops.
He turneth it down and insists that I wrap it in clean, white cloths.
Yea, verily, tho' mine hog grew up in mine own orchard, he condemneth it for cholera and fly-blows, and I lose twelve dollars and a half.
He hurls threats at me if I bring not the livers and "lights," and if I am slow about paying my bill at the month's end he maketh me bring the money at the time of inspection.
He anointeth my livers with kerosene and insisteth on seeing the hides and earmarks even tho' I tell him there is none.
Surely the words "Clean up and stay clean" will be hurled at me all the days of my life, and I shall live in fear of the inspector for ever and ever. Amen.

Mulford Vet. Bulletin.

Correspondence.

BLOODY MILK.

To the Editor of THE VETERINARY JOURNAL.

DEAR SIR,—In the VETERINARY JOURNAL of July and November, 1918, I read that Liq. Ferri Perchloride is good for bloody milk. I tried 2 drachm doses of Liq. Ferri Perchloride three times a day on four cows. Two of them became all right on the sixth day, and the other two on the seventh day. From my experience I also think that Liq. Ferri Perchloride is the best remedy for bloody milk.

ABORTION IN A COW.

The owner—a wealthy landlord—brought a cow to me which had aborted four times. The history is, that after about two months the cow becomes pregnant, big swellings will appear on the hind legs in the region of the udder and lower part of the abdomen. These swellings will be present till the fourth or fifth month, and then abortion takes place. Just after the abortion the swellings have completely disappeared.

I tried Biniodide of Mercury and Potassium Iodide, 5 gr. doses, for twelve days, and the swellings have completely disappeared. The cow did not abort this time. Has anyone else treated such cases and what is the reason of the swelling ?—Yours. etc.,

Thiruvella, Travancore, South India, 1st April, 1919.

ABRAHAM JOSEPH, G.B.V.C., Veterinary Sub-Inspector.

Personal.

THERE was a very keen contest for seats on the first Ross-shire Education Authority. In the division of Mid-Ross, the most important in the county, there were not less than eighteen candidates for seven seats, comprising most of the notables in the division. It is gratifying to note that Mr. George Gair, J.P., M.R.C.V.S., a former member of Urquhart School Board, and who has taken much interest in the scientific side of education, headed the poll with 334 votes, being 48 above the quota, so was elected on the first count.

MR. HENRY R. EVE, M.R.C.V.S., has again been appointed Official Vet. Surgeon to the Folkestone Racecourse for 1919. Races held at Lewes, on June 12th, 13th inst.

Review.

REPORT FOR THE VETERINARY DIVISION, DEPARTMENT OF AGRICULTURE, UNION OF SOUTH AFRICA, FOR THE YEAR ENDING MARCH 31, 1918.

THE principal veterinary officer Mr. C. E. Gray, sends us this report. It is a record of good scientific work done by a depleted staff that has worked hard and well. The whole scope and area of veterinary operations in South Africa needs putting on a solid and adequate foundation. The country is riddled with quackery; the status of the veterinary profession is very inadequately upheld by the Government, and immense pecuniary loss to the State arises annually through a lack of proper visualisation of the position and the adoption of full and complete measures to deal with the big problems to be tackled. Organisation and administration need conducting with zeal; the veterinary staff might be with benefit increased five-fold, and the pecuniary reward for work done might be made far more consonant with the great importance

and wealth of the Union and the protection and health of the £100,000,000 worth of livestock that it contains. All through the report Mr. Gray, who has worked heroically, seems to grasp the magnitude of the task to be done, and to regret the inadequate manner in which present-day conditions enable disease to be dealt with. Taking anthrax, for instance, in which 221 outbreaks were notified, Mr. Gray believes that the returns do not represent a quarter of the number of outbreaks. With regard to tuberculosis, the position is uncertain and unsatisfactory, and it will not be better, nor will notification be at all thorough, and repressive measures be fully carried out between stockowners and those administering the regulations, until a reasonable and generous compensation is given to cattle owners.

Rinderpest showed a considerable spread, and the staff did its best to cope with it. It was, however, reduced in numbers by sickness and withdrawals, and only five men remained until the end of the year. Between thirty-seven and thirty-eight thousand head of cattle were, however, immunised, and some members of the staff covered over 1,400 miles on foot in carrying out the work. What a story this record furnishes! There is an urgent call for efficient veterinary officers to supervise the meat export trade, which is increasing and developing. The standard of South African meat products for export can only get a good name and be kept in the A1 class by adoption of the methods prevailing in other great meat exporting countries. Mr. F. B. Smith, the Secretary for Agriculture, is alive to the veterinary position in the Union, and if more power is given to his arm he may succeed in improving the position. In the meantime there is a crying need for a powerful and influential South African Lloyd George to get things done that will make South Africa second to no other country as regards the health and value of its flocks and herds and the adequacy and efficiency of its veterinary staff.—

G. M.

ERRATA.—MAY ISSUE.

Page 163, line 22—" anuntreated " should be " an untreated."

Page 165, line 6—" entriopion " should be " entropion."

Page 183, line 6—" liquor ammon. ant. com." should be " liquor ammon. acet. conc."

NOTICES.

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Letters for the JOURNAL, literary contributions, reports, notices, books for review, exchanges, new instruments or materials, and all matter for publication (except advertisements) should be addressed to the Editor.

Manuscript—preferably typewritten—should be on one side only of paper, marked with full name of author.

Illustrations for reproduction should be in good black or dark brown ink on white paper or card.

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